

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Attorney Docket No.: 29805.107.2

Richard O. Ruhr et al.

Application No.: 10/781,385

Examiner: Lang, Amy T.

Filed: February 18, 2004

Group Art Unit: 3731

For: CONVEYOR LUBRICANTS FOR USE IN THE FOOD AND BEVERAGE INDUSTRIES

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**AFFIDAVIT UNDER 37 CFR 1.132**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

District of Columbia       )  
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Washington D.C.            )       S.S.

Richard O. Ruhr, being first duly sworn, deposes and says:

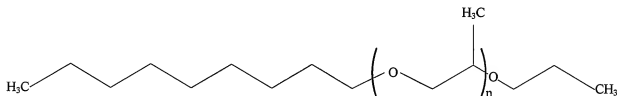
1. I am one of the inventors of the subject matter disclosed and claimed in U.S. Pat. Application Serial No. 10/781,385. I received my Bachelor of Science in Chemistry degree from Saint Cloud State University, Saint Cloud, Minnesota. I am a Scientist at Ecolab USA Inc, where I have twenty-two years of experience working as a product formulation chemist in the Food & Beverage Division. I am currently working as a formulation chemist in the Lubrication Group of the Food & Beverage Division.

2. The length of the alkyl chain of alkoxyated alcohols affects the solubility of the surfactant in water. Surfactants with propoxyl groups added to the alkyl chain are less water soluble than surfactants with ethoxyl groups. Because of this, propoxylated alcohols are harder to keep in solution and have not typically been used as surfactants in lubricants. However, we have discovered that by using a propoxylated alcohol with a chain length of C<sub>9</sub> to C<sub>11</sub>, we

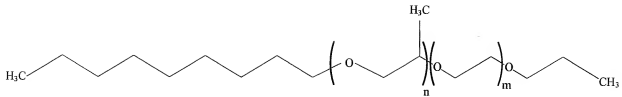
unexpectedly found it to be sufficiently water soluble as well as possessing good defoaming properties.

3. A C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol would provide defoaming activity to any ether carboxylate. The defoaming activity is not limited to the oleyl ether carboxylates of the examples. This is because ether carboxylates form structures at the air and liquid interface of the bubble. The C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol inserts into these structures and, by its presence, makes the structure less stable, thereby disrupting it and reducing foaming. It is the C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol that is critical to the defoaming activity, and not the choice of the ether carboxylate. Therefore this activity of the C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol would occur in ether carboxylates generally, and not just in oleyl ether carboxylates.

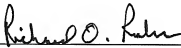
4. A C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol is an alcohol having only repeating propoxyl groups. An example of a C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol is Degressal® SD 20, as used in Example 1 of the application. The structure shown below is an example of a C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol.



5. An alcohol which includes both ethoxyl and propoxyl groups is not called a propoxylated alcohol but rather it is referred to as an ethoxylated propoxylated alcohol or alkoxyate. Triton® EF-19, as used in Example L of the application, is a C<sub>8</sub> to C<sub>10</sub> ethoxylated propoxylated alcohol. Triton® EF-19 includes repeating units of both ethoxyl and propoxyl groups together. Triton® EF-19 is not a C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol. The structure shown below is an example of a C<sub>8</sub> to C<sub>10</sub> ethoxylated propoxylated alcohol.



6. The use of a C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol in a lubricant results in an unexpected decrease in initial foam and 5 minute foam. As shown by the comparison between Example 1 and Example L of the application, the lubricant composition of Example 1, which included a C<sub>9</sub> to C<sub>11</sub> propoxylated alcohol, exhibited superior performance for both initial foam and 5 minute foam. The defoaming action of Example L, which included a C<sub>8</sub> to C<sub>10</sub> ethoxylated propoxylated alcohol, was not as effective. The more effective defoaming property of Degressal SD 20 relative to the other tested defoaming surfactants is due to the molecular structure of the surfactant providing a solubility in water solutions that is sufficient to allow it to enter into the micelle structure with high foaming surfactants and also into the foam bubble surfaces that form. At the air liquid interface of the foam, Degressal SD 20 interferes with the high foaming surfactant's ability to create stable lasting foam to a greater degree than less soluble surfactants such as the Triton® EF-19, as used in Example L of the application, a C<sub>8</sub> to C<sub>10</sub> ethoxylated propoxylated alcohol.

  
 Richard O. Ruhr

Subscribed and sworn to before me  
 this 29th day of April, 2009, 2008-11

  
 Notary Public

